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Claims

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A digital peak detector, comprising:

- (a) a peak register connected to receive a discrete pulse signal at its data input;
- (b) a subtractor connected to receive said discrete pulse signal at its adding input;
- (c) said peak register connected so that its output is an input to the subtracting input of said subtractor and is applied to the data inputs of maximum and minimum peak value latches;
- (d) the output of said subtractor is connected so that its output provides inputs to a comparator and to an exclusive OR gate;
- (e) said exclusive OR gate is connected so that its output is applied to the enable input of said peak register;
- (f) a noise threshold digital value is applied to one of the inputs of a data multiplexer and to the input of a negating and scaling unit, the output of which negating and scaling unit is applied to the other input of said data multiplexer;
- (g) said multiplexer is connected so that its output is an input to said comparator;
- (h) said comparator is connected so that its output is a data input to a flip-flop;
- (i) said flip-flop is connected so that its output is applied to the selecting input of said data multiplexer, to an input of said exclusive OR gate, and to the latching inputs of said maximum and minimum peak value latches, and provides a peak detect signal.

2. A method of operating a peak detector, comprising:
  - (a) providing said peak detector with noise threshold;
  - (b) applying a discrete pulse input signal representing a pulse signal in presence of noise to said peak detector; and
  - (c) using said peak detector to detect local maximum or local minimum of said input signal without detecting the local maximum or local minimum caused by noise alone when superimposed on said input signal.
3. A method of operating a peak detector, as defined in Claim 2, wherein said step (c) further comprises: detecting said local maximum or local minimum with noise threshold.
4. A method of operating a peak detector, as defined in Claim 2, wherein said step (c) further comprises: detecting said local maximum or local minimum with noise threshold hysteresis.
5. A method of operating a peak detector, as defined in Claim 2, wherein said step (c) further comprises: tracking either rising or falling portions of said input signal.
6. A method of operating a peak detector, as defined in Claim 2, wherein said step (c) further comprises: detecting maximum or minimum of said input signal by switching the mode from tracking maximum to tracking minimum or vice versa.
7. A method of operating a peak detector, as defined in Claim 6, wherein: switching tracking modes includes comparing either maximum or minimum noise threshold to the difference of the input signal and the tracked peak value.

**AMENDED SHEET**